

AI Planning

Exercise Sheet 3

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Exercise 3.1

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Exercise 3.2

(d=dancing, h=at-home, w=work, ro=romeo, ju=juliet)

We start at: $\gamma = ju-d \wedge ro-h$

We want to reach: $I = \{ro-h \mapsto 1, ju-h \mapsto 1\}$

Operators: $go-d, go-w, go-h$

$$\begin{aligned} regr_{go-w}(\gamma) &= ro-h \wedge \\ &((EPC_{ju-d}(e_{go-w}) \vee (ju-d \wedge \neg EPC_{\neg ju-d}(e_{go-w}))) \wedge \\ &(EPC_{ro-h}(e_{go-w}) \vee (ro-h \wedge \neg EPC_{\neg ro-h}(e_{go-w})))) \\ &) \wedge \kappa \end{aligned}$$

$$\begin{aligned} regr_{go-w}(\gamma) &= ro-h \wedge \\ &((\perp \vee (ju-d \wedge \top)) \wedge \\ &(\perp \vee (ro-h \wedge \perp))) \\ &) \wedge \kappa \end{aligned}$$

$$\begin{aligned} regr_{go-w}(\gamma) &= \perp \\ \Rightarrow \gamma &\text{ is not reachable by means of } go-w \end{aligned}$$

$$\begin{aligned} regr_{go-h}(\gamma) &= ro-w \wedge \\ &((\perp \vee (ju-d \wedge \top)) \wedge \\ &(EPC_{ro-h}(e_{go-h}) \vee (ro-h \wedge \neg EPC_{\neg ro-h}(e_{go-h})))) \\ &) \wedge \kappa \end{aligned}$$

$$\begin{aligned} regr_{go-h}(\gamma) &= ro-w \wedge \\ &((\perp \vee (ju-d \wedge \top)) \wedge \\ &\top) \\ &) \wedge \kappa \end{aligned}$$

$$\begin{aligned} regr_{go-h}(\gamma) &= ro-w \wedge ju-d \\ \Rightarrow \gamma &\text{ is reachable from } ro-w \wedge ju-d \text{ by means of } go-h \end{aligned}$$

//Note: less verbose from this point onwards.

$$regr_{go-d}(\gamma) =$$